

CEDAR CREEK BRIDGE
(Goodie Creek Bridge)
Arkansas Bridges 2005
Spanning Cedar Creek at CR 235
Rosie
Independence County
Arkansas

HAER AR-74
AR-74

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

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CEDAR CREEK BRIDGE (Goodie Creek Bridge)

HAER No. AR-74

Location:	Spanning Cedar Creek (Goodie Creek) at CR 235, Rosie, Independence County, Arkansas
UTM:	15.632089.3945364, Salado, Arkansas Quad.
AHTD #:	14001
Structural Type:	Concrete arch
Construction Date:	1941
Builder:	Works Projects Administration (WPA)
Owner:	Independence County, Arkansas
Use:	Vehicular bridge
Significance:	Cedar Creek Bridge is a well-crafted vernacular example of the work of the Works Projects Administration (WPA) in Arkansas.
Project Information:	<p>The Arkansas Historic Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program that documents historically significant engineering sites and structures in the United States. HAER is administered by the Heritage Documentation Programs Division of the National Park Service, United States Department of the Interior, Richard O'Connor, Manager. The Arkansas State Highway and Transportation Department sponsored this project.</p> <p>Lola Bennett, HAER Historian, 2007</p>

Chronology

- 1803 Louisiana Purchase doubles size of the United States
- 1819 Arkansas Territory created from part of Louisiana Purchase
- 1825 Independence County formed
- 1836 Arkansas becomes 25th state to join the Union
- 1873 Arkansas Legislature authorizes counties to build and maintain bridges
- 1879 Rosie appears on *Post Route Map of Arkansas*
- 1929 U.S. stock market crash marks beginning of the Great Depression
- 1932 President Franklin D. Roosevelt proposes unemployment relief programs
- 1935 Congress passes Emergency Relief Appropriation Act; WPA created
- 1936 Crossing appears on General Highway and Transportation Map of Independence County
- 1939 Independence County applies for county-wide WPA project
- 1941 WPA builds Cedar Creek Bridge
- 1943 WPA program ends
- 1995 Cedar Creek Bridge listed in the National Register of Historic Places

Description

The Cedar Creek Bridge is a two-span, closed-spandrel concrete deck arch bridge.¹ The structure is 30' long and 26' wide, with a 24' roadway. The modified Gothic arches spring from a point 4' above the concrete footings, rise approximately 3' to the crown and span 12'. The central pier is 2' thick. The foundations are concrete footings on shale rock. Wing walls protect the embankments along the approaches to the bridge. The parapets have concrete caps. Except for the footings and arch barrels, the bridge is faced with mortared local stone.

History

This crossing first appears on the 1936 General Highway Map of Independence County. There was presumably a ford here at that time, as the crossing is delineated with dotted lines. The present bridge was completed in 1941 as part of WPA Project #65-1-63-2257 to repair and construct roads throughout Independence County. According to WPA records, the project was approved January 29, 1940. Work included "*clearing, grubbing, excavating, grading and surfacing; reconstructing fences; constructing drainage structures; erecting road signs and markers; installing pipe; and performing incidental and appurtenant work.*" Expenditures totaled \$535,998.

Design

Concrete bridges first appeared in Europe in 1840 and in the United States in 1872, but the technology remained largely experimental until the end of the nineteenth century.² Concrete has little tensile strength, so early concrete bridges were constructed as solid barrel, filled arches that worked solely in compression and relied on a substantial mass of material to carry loads. Beginning in 1854, when William Wilkinson obtained a British patent for reinforcing concrete with wire rope, European and American inventors experimented with ways of combining the compressive properties of concrete with the tensile strength of iron, to produce stronger, lighter, more cost efficient structures. In 1875, French gardener Joseph Monier (1823-1906) became one of the first individuals to apply reinforced concrete technology to bridges.³

In 1889, a decade and a half after Monier's pioneering experiments, concrete contractor Ernest L. Ransome (1844-1917) built America's first reinforced concrete bridge in San Francisco.⁴ The modest 20' span was scored and roughened to imitate a traditional masonry bridge and even had artificial stalactites on the intrados. Beneath the facade, however, was a modern concrete structure, with twisted iron rods embedded in the specific areas where tension forces occur.

¹ Presumably, the concrete is reinforced, although no information has been found to confirm this.

² The 39' Caronne Canals Bridge at Grisoles, France, is reportedly the world's first concrete bridge. The first in the United States was Cleft Ridge Span in Brooklyn, New York (see HAER No. NY-336).

³ The Pont de Chazelet (1875), a 52' reinforced concrete pedestrian bridge, still survives in France.

⁴ See HAER No. CA-33, Alvord Lake Bridge.

Ransome's concrete reinforcing system was widely used throughout the United States in the twentieth century.

Throughout the 1890s and early 1900s, other engineers, including Joseph Melan (1853-1941), Fritz von Emperger (1862-1942), Edwin Thacher (1840-1920) and Daniel Luten (1869-1945), aggressively developed and promoted the new technology. Reinforced concrete bridges were durable, aesthetic and cost effective. They used readily available materials, could be built by local laborers and required less maintenance than other types of bridges. In the early twentieth century, with the advent of the automobile and demand for improved roads, reinforced concrete became the preferred material for bridges in the United States. The New Deal Era, in particular, saw a proliferation of stone-faced reinforced concrete bridges, as the Civilian Conservation Corps and Works Projects Administration built aesthetically pleasing structures that were also durable and economical.

Builder

The Works Projects Administration (WPA) was a federal agency established under President Franklin D. Roosevelt to combat unemployment during the Great Depression. Originally called the Works Progress Administration, it employed 8,500,000 people in public works projects between 1935 and 1943. In addition to projects that employed artists, actors and writers, WPA workers built schools, courthouses, parks, roads and bridges, many of which are still in use today.

Sources

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